

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of:

Spectrum Task Force Invites Technical Input) ET Docket No. 10-142
on Approaches to Maximize Broadband Use) WT Docket Nos. 04-356, 07-195
of Fixed/Mobile Spectrum Allocations in the)
2 GHz Range)

COMMENTS OF AT&T

AT&T Inc. (“AT&T”) hereby submits the following comments in response to the Federal Communications Commission’s (“Commission”) Public Notice seeking comment on approaches to encouraging the growth of terrestrial mobile broadband in the 2 GHz spectrum range.¹

AT&T supports the Commission’s efforts to effectuate the National Broadband Plan spectrum goal of making available an additional 500 MHz of wireless broadband spectrum. Transitioning the 2 GHz MSS band to terrestrial mobile broadband use will be an important component of achieving the Commission’s spectrum goals. However, the band plan concepts put forth in the *2 GHz Public Notice* do not make the most efficient use of the available spectrum, and even the most ambitious of those plans has significant drawbacks. In bringing to use more mobile broadband spectrum, the Commission should focus on developing a holistic and comprehensive band plan that considers all the spectrum available for mobile broadband services

¹ See Spectrum Task Force Invites Technical Input on Approaches to Maximize Broadband Use of Fixed/Mobile Spectrum Allocations in the 2 GHz Range, ET Docket No. 10-142, WT Docket Nos. 04-356, 07-195, *Public Notice*, 26 FCC Rcd 3486 (2011) (“*2 GHz Public Notice*”).

as well as the interactions between the various bands and the interference challenges associated with particular spectrum pairings.²

Below, AT&T outlines one proposal of how the 2 GHz MSS spectrum could be combined with existing spectrum resources and other potential targets for repurposing to produce a coordinated, rational band plan that is consistent with the existing AWS and PCS allocations, and would make up to 90 MHz of additional spectrum available for mobile broadband use. Rather than moving forward with the band plan concepts proposed in the *2 GHz Public Notice*, the Commission should focus on collaborating with NTIA to pursue the reallocation of key federal spectrum resources, and on developing voluntary mechanisms for repurposing of commercial spectrum that will extract appropriate value for the public interest and will enable the creation of a comprehensive mobile broadband band plan.

I. ANY NEW 2 GHZ BAND PLAN SHOULD REFLECT CERTAIN KEY SPECTRUM PRINCIPLES.

In developing a comprehensive strategy for bringing to market substantial amounts of new mobile broadband spectrum, the Commission should adhere to several guiding principles for the identification of such allocations.³ Any new 2 GHz band plan should include contiguous spectrum blocks large enough to take advantage of the enhanced efficiencies of the Long Term Evolution (“LTE”) 4G mobile broadband protocol. In addition to volume of spectrum designated for mobile broadband, the Commission should also consider efficiencies and

² See Comments of AT&T Inc., ET Docket No. 10-142 at 15 (filed Sept. 15, 2010) (“AT&T MSS NPRM Comments”).

³ See Comments of AT&T Inc., ET Docket No. 10-123 at 2-3 (filed Apr. 22, 2011) (“AT&T NTIA Spectrum Bands PN Comments”); Comments of AT&T Inc., ET Docket No. 10-142 at 3-4 (filed Sept. 15, 2010) (“AT&T MSS NPRM Comments”); Reply Comments of AT&T Inc., ET Docket NO. 10-142 at 9-12 (filed Sept. 30, 2010) (“AT&T MSS NPRM Reply Comments”); Comments of AT&T Inc., GN Docket Nos. 09-47, 09-51, 09-137 at 16-18 (filed Oct. 23, 2009).

synergies achievable through particular band plans. For example, the Commission should strive to locate new mobile broadband allocations near existing terrestrial broadband allocations in such a manner as to avoid harmful interference and maximize spectrum resources and efficiencies. In addition, the Commission should adhere to internationally harmonized allocations to the greatest extent possible in order to promote efficiencies with respect to equipment design.

Any new mobile broadband allocations should be large enough to support several contiguous spectrum blocks. Ensuring that new spectrum allocations are in large blocks is necessary to take full advantage of advanced mobile broadband technologies. As AT&T and others have observed, LTE and other 4G standards require large contiguous spectrum bands to achieve increased throughput speed and maximize spectral efficiency. LTE, while capable of scaling for use in smaller bandwidth channels, does not achieve optimal spectrum efficiency gains until at least 20 MHz of bandwidth is accessible—which requires paired 20 MHz channels, or 40 MHz overall.⁴ Future versions of the standard, such as LTE-Advanced, will be scalable for even larger aggregations of spectrum, including even as much as 100 MHz of spectrum.

Equally important to identifying a sufficient quantity of additional spectrum is ensuring that the bands repurposed are spectrally located in such a manner as to be most useful for mobile broadband uses upon being repurposed. The spectrum bands identified should have sufficient uplink and downlink separation to allow full-power mobile broadband use of the entire band with conventional and commercially available filtering technologies. The Commission should also consider potential synergies or conflicts between existing services in the spectrum bands adjacent

⁴ Rysavy Research, HSPA to LTE-Advanced, EGPP Broadband Evolution to IMT Advanced (4G) (Sept. 2009) at 22, *available at* http://www.rysavy.com/Articles/2009_09_3G_Americas_RysavyResearch_HSPA-LTE_Advanced.pdf.

to potential candidates for repurposing. As a rule, like services should be placed near each other, as interference mitigation is simplified where adjacent services have similar characteristics. For example, it is preferable to identify additional mobile broadband applications adjacent to existing terrestrial services, rather than, having to address the sorts of interference concerns posed by placing terrestrial wireless services adjacent to satellite services or terrestrial broadcast applications. In addition, placing new mobile broadband services in spectrum bands directly adjacent to existing mobile services can create efficiencies in developing infrastructure equipment and consumer devices that will speed deployment and adoption of the new services.

Finally, the Commission should seek, wherever possible, to create internationally harmonized spectrum allocations. When U.S. wireless providers use the same spectrum as the rest of the world, infrastructure vendors, device manufacturers, and applications developers can take advantage of economies of scale associated with making a single piece of equipment or application that can be used almost anywhere, rather than having to devote scarce resources to making separate devices and applications for the U.S. marketplace. International harmonization also promotes international mobile roaming, making it easier for U.S. consumers to use their mobile devices abroad, and making the U.S. a more attractive destination for foreign business and tourism.

II. AT&T PROPOSES A BAND PLAN THAT THAT WILL ADVANCE THE NATIONAL BROADBAND PLAN'S SPECTRUM OBJECTIVES TO A GREATER EXTENT THAN THE PROPOSALS IN THE 2 GHz PUBLIC NOTICE.

The Commission should engage in a holistic and comprehensive approach to band-planning in which the 2 GHz MSS frequencies would be addressed as part of a larger, coordinated band plan developed to make most efficient use of spectrum for terrestrial mobile broadband services. While AT&T appreciates the Commission's desire to consider possible

synergies and interrelationships between existing and potential mobile broadband allocations within the 2 GHz spectrum range, AT&T believes that the Commission should be considering the integration of the 2 GHz MSS frequencies in a broader band plan looking beyond just the 2 GHz band to opportunities with the AWS bands and federal spectrum as well. The Commission should work with NTIA and existing licensees to optimize spectrum allocations across a wide range of bands. Although there are a number of open issues that will need to be resolved before the public can enjoy the benefits of a fully-integrated, comprehensive band plan, the importance of identifying a substantial amount of additional mobile broadband spectrum demands that the Commission seek the most efficient outcome.

The Commission should continue to work with NTIA to repurpose the 1755-1780 MHz band and pair it with the AWS-3 band at 2155-2175 MHz and the upper portion of the AWS-2 J Block at 2175-2180 MHz. The advantages of this proposal in terms of synergies with current AWS-1 deployment, the use of existing or easily modified infrastructure equipment, and the benefits of international harmonization are well-known to the Commission. However, the concepts considered in the Appendix to the *2 GHz Public Notice* are inconsistent with this vision. Although combining the AWS-2 H and J Blocks and a portion of the AWS-3 band with the 2 GHz MSS spectrum to make a 50 or 60 MHz wide paired allocation appears attractive, it ultimately forecloses a more efficient option that is more in keeping with the National Broadband Plan goals. While the proposed 50 and 60 MHz pairing plans may seem to be the easier solution today, they risk sacrificing significant public interest benefits in the interest of expediency. Furthermore, because the uplink portion (2000-2020 MHz) of the 2 GHz MSS band is adjacent to the downlink portion (1930-1990 MHz) of the Broadband PCS band, the proposed concepts create a risk of interference to Broadband PCS mobile devices. This risk is amplified in the 60

MHz pairing, which incorporates the AWS-2 H Block. This interference risk would necessitate the creation of a guard band that would waste potential mobile broadband spectrum.⁵

Looking beyond just the 1755-1780 MHz band, there are other possibilities for beneficial pairings of repurposed federal spectrum with the new terrestrial mobile allocations in the 2 GHz band. For example, NTIA has identified the 1780-1850 MHz band for detailed evaluation of its potential for repurposing for commercial broadband use.⁶ To the extent NTIA determines that a portion of this band is suitable for repurposing, it could be beneficial to pair the 1780-1800 MHz band with the 2180-2000 MHz portion of the 2 GHz MSS band, creating—in conjunction with the existing AWS spectrum and the 1755-1780/2155-2180 MHz pairing—a large contiguous band of mobile broadband spectrum from 1710 MHz to 1800 MHz on the uplink side and 2110 MHz to 2200 MHz on the downlink side. The 90 MHz of additional paired broadband spectrum made available under this proposal would be a substantial addition to the nation’s broadband resources, and could have a marked effect on mobile broadband availability, innovation, and competition.

Finally, the Commission should also consider possible synergies based upon use of the 1695-1710 MHz band, which NTIA suggested be made available for commercial broadband within the next five years.⁷ As AT&T explained in its comments on the NTIA Spectrum Bands Public Notice, pairing of the 1695-1710 MHz band with the 2155-2180 MHz band is

⁵ It is worth noting that reversing the uplink/downlink configuration of the new 2 GHz terrestrial mobile band would resolve the interference concern with respect to Broadband PCS devices, it would merely shift the interference risk toward the AWS-3 or AWS-1 bands.

⁶ NTIA, NTIA Takes Next Step in 500 MHz Wireless Broadband Initiative, Jan. 31, 2011 *available at* http://www.ntia.doc.gov/press/2011/500mhzstatement_02012011.html.

⁷ See U.S. Department of Commerce, An Assessment of the Near-Term Viability of Accommodating Wireless Broadband Systems in the 1675-1710 MHz, 1755-1780 MHz, 3500-3650 MHz, and 4200-4220 MHz, 4380-4400 MHz Bands, Oct. 2010 *available at* http://www.ntia.doc.gov/reports/2010/FastTrackEvaluation_11152010.pdf.

substantially less desirable in nearly every way than a 1755-1780 MHz/2155-2180 MHz pairing, however other pairings for the 1695-1710 MHz band may exist.⁸ For example, one option would be pairing of the 1695-1710 MHz band with the 1995-2025 MHz (upper H block, lower 2 GHz MSS, and lower J block) for an asymmetrical pairing that puts the lower portion of the 2 GHz MSS band to productive mobile broadband use while also remaining consistent with the existing uplink/downlink configurations in neighboring bands. Attached to this pleading, for the Commission's consideration, is a graphical representation of the band plan concepts discussed above.

III. THE COMMISSION SHOULD CONSIDER ALL OPTIONS TO PROMOTE VOLUNTARY REPURPOSING OF THE 2 GHZ MSS BAND.

To accomplish the transition of the 2 GHz MSS spectrum and surrounding bands to mobile broadband use pursuant to a comprehensive band plan, as discussed above, the Commission should continue to explore incentive auctions and other mechanisms for voluntary repurposing that ensure that the public is able to extract the appropriate value from the newly repurposed spectrum. As AT&T explained in Reply Comments on the *MSS NPRM/NOI*, transitioning any returned or canceled 2 GHz spectrum licenses to terrestrial use is in line with established Commission policy as expressed in the National Broadband Plan and in the *Third AWS Order*.⁹ In making this transition, the Commission should focus on identifying market-based mechanisms that will ensure that the spectrum is moved to its highest and best use.

⁸ See AT&T NTIA Spectrum Bands PN Comments at 5-6.

⁹ See AT&T MSS NPRM Reply Comments at 5-6 (citing Connecting America: The National Broadband Plan, Recommendation 5.8.4, pp. 87-88 (2010), and Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems, *Third Report and Order*, *Third Notice of Proposed Rulemaking and Second Memorandum Order and Opinion*, ET Docket No. 00-258, 18 FCC Rcd 2223, 2239 ¶ 32 (2003) ("*Third AWS Order*").

Incentive auctions are the best method for determining the market value of new terrestrial spectrum rights while also compensating incumbent licensees for a portion of the value of returned spectrum. Incentive auctions would provide flexibility to licensees while creating an incentive to move spectrum to its highest and best use and capturing substantial economic value for the public. In the event Congressional authorization for an incentive auction is not forthcoming, the Commission could continue to consider other options for voluntary repurposing of privately held spectrum. However, any repurposing mechanism should only be implemented if it will make available a substantial amount of contiguous spectrum that can be put to use in an efficient, comprehensive band plan as discussed above. Making chunks of spectrum available for terrestrial use without doing so in a strategic way that takes a holistic view of the band runs the risk of short changing the National Broadband Plan's spectrum goals and failing to capture the full value of the spectrum in question.

IV. CONCLUSION

For the foregoing reasons, the Commission should take the steps necessary, including working with NTIA to reallocate federal spectrum for commercial use, to allow implementation of a 50 MHz (1755-1780/2155-2180 MHz) and, potentially, a 90 MHz (1755-1800/2155-2200 MHz) extension of the AWS band. Among the available options, this alternative most significantly advances the spectrum objectives of the National Broadband Plan while providing significant efficiencies and synergies that will expedite the deployment of mobile broadband to all Americans. The Commission should avoid alternatives that foreclose the possibility of this outcome, which best serves the public interest.

Respectfully submitted,

AT&T Inc.

By: /s/ Michael P. Goggin

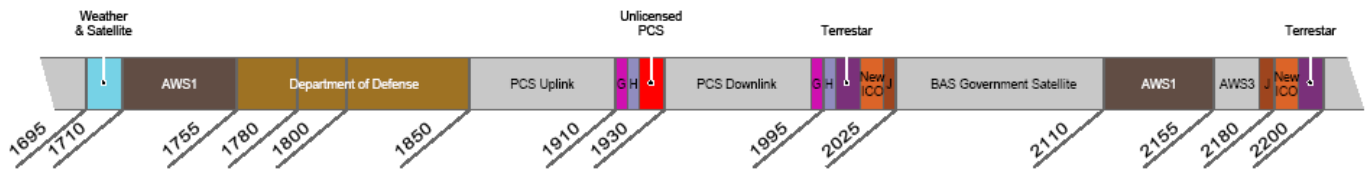
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ATTACHMENT A

Comprehensive Terrestrial Mobile Band Plan Concept

Current Band Plan



Proposed Band Plan

